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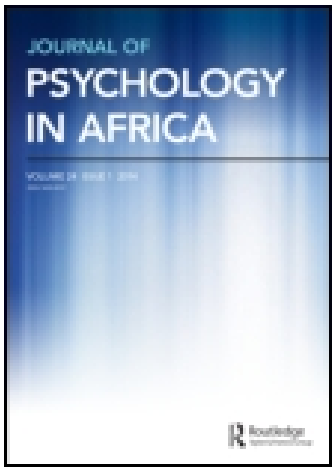

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HIV risk after release from prison: a pilot case-control study in Canada, France, Ivory Coast and South Africa

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HIV risk after release from prison: a pilot case-control study in Canada, France, Ivory Coast and South Africa

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This study aimed to assess HIV knowledge, risk perception and risk behaviour of ex-offenders at risk of new infection and to compare them with the general population. A case-control interview study was conducted with conveniently sampled ex-offenders and persons with no history of incarceration in four countries (Canada, France, Ivory Coast, South Africa). The total sample included 232 participants with a mean age of 33.9 years (SD = 9.8 years). Results indicate various high HIV risk behaviours including multiple sexual partners, irregular sexual partner, and commercial sexual partner. Other risk factors were unprotected sex at last intercourse with a regular partner, with an irregular partner and with a commercial sexual partner. A history of incarceration did not differentiate risk for infection. Younger age, coming from the Ivory Coast, and higher HIV risk perception were found to be associated with HIV risk behaviour. Prevention efforts should focus on education, promotion of safe sex and substance abuse treatment.

Keywords: ex-offenders, general population, HIV risk behaviour, Canada, France, Ivory Coast, South Africa

Introduction

HIV is a serious problem for many countries (Dolan, Kite, Black, Aceijas, & Stimson, 2007). For example, in Canada, a country where only 0,3% of the population is HIV positive (UNICEF, Canada, 2013), recent data shows that the number of people living with HIV increased by 11.4% between 2008 and 2011 (Public Health Agency of Canada, 2013). In Ivory Coast, estimates from UNICEF were between 320 000 and 400 000 people living with HIV in 2011, or 3.0% of the population (UNICEF, Côte d'Ivoire, 2013). In France, estimates were between 130 000–200 000 people living with HIV or 0,4% of the population (UNICEF, France, 2013). In South Africa, where the number of HIV positive people is one of the highest in the world, UNICEF estimated that 17.3% of the population were HIV positive in 2011 (UNICEF, South Africa, 2013).

Inmates may be at much greater risk of HIV infection than the general population from lack of protective resources such as condoms and disinfectants (Goyer & Gow, 2002). Well known risks for HIV infection would apply to ex-prisoners including their being networked with multiple sexual partners and engaging in unprotected sex (Essuon, Simmons, Stephens, Richter, Lindley & Braithwaite, 2009; MacGowan, Margolis, Gaiter, Morrow, Zack, Askew, & Project START Study Group, 2003; Margolis, MacGowan, Grinstead, Sosman, Kashif, Flanigan, & Project START Study Group, 2006). Prevalence of substance misuse among ex-offenders (after release from prison) (Adams, Nowels, Corsi, Long, Steiner, & Binswanger, 2011; Grinstead, Faigeles, Comfort, Seal, Nealey-Moore, & Morrow 2005; Stephenson, Wohl, McKaig, Golin, Shain, Adamian, & Kaplan, 2006) was a significant risk factor for infection (MacGowan et al., 2003). Other studies also found a lack of antiretroviral treatment (ART) among ex-offenders (Clements-Nolle, Marx, Pendo, Loughran, Estes, & Katz, 2008). Largely, populations with a history of incarceration had a higher rate of HIV risk behaviour than in those without incarceration (Khan, Wohl, Weir, Adimora, Moseley, Norcott, & Miller, 2007; Hudson, Nyamathi, Bhattacharya, Marlow, Shoptaw, Marfisee, & Leake, 2011). Clark, McCullumsmith, Waesche, Islam, & Cropsey (2013) found among ex-offenders that having a history of sexual abuse, not having insurance, selecting any drug of choice, younger age and Black race were associated with HIV risk. Twice as many offenders are under community supervision as are incarcerated at any given time, HIV prevention needs have been largely ignored among probationers and parolees, and little is known about their HIV risk behaviours or HIV prevention needs (Clark et al., 2013).

Studies have documented generally high HIV knowledge among offender populations (Akeke, Mokgatle, & Oguntibeju, 2007a; Belenko, Langlay, Crimmins, & Chaple, 2004), but also a number of HIV misconceptions among the incarcerated offenders (Belenko et al., 2004; Odujinrin & Adebajo, 2001; Sabitu, Iliyasu, & Joshua, 2009), high HIV/AIDS stigma (Akeke et al., 2007a), inconsistent access to HIV information and services, mistrust of government HIV services (Belenko et al., 2004), high HIV risk behaviours prior to and during imprisonment (lack of/inconsistent condom use; anal sex, substance use) (Chimphambano, Komolafe, & Muula 2007;

Odujinrin & Adebajo, 2001; Sabitu et al., 2009; Sifunda, Reddy, Braithwaite, Stephens, Bhengu, Ruiter, & Van Den Borne, 2007), tattooing (Akeke, Mokgatle, & Oguntibeju, 2007b) and history of sexually transmitted infection (STI) (Stephens, Conerly, Braithwaite, Sifunda, Ogbuawa, Bhengu, & Reddy, 2009). In response to a substantial risk for HIV infection, many jails and prisons have increased HIV prevention and related services. Compared with inmates, probationers and parolees have substantially greater opportunities to engage in HIV risk behaviours (United Nations, 2006). Prevention programmes aimed at the most 'at risk' groups of HIV infection such as ex-offenders have not been very efficient in reaching these populations. Where such prevention programmes were available, unsatisfactory results were achieved. These 'at risk' groups are also the most neglected with regard to access to treatment and prevention programmes (United Nations, 2006).

Goals of the study

The first aim of this study is to explore the link between HIV knowledge, beliefs and HIV risk behaviours among persons with a history of incarceration and with no history of incarceration in four sites (Canada, Ivory Coast, France and South Africa) from three continents. These countries were included in the present study because research has shown that even if each local HIV epidemic has its own characteristics, some common processes may be involved in HIV risk behaviours among vulnerable groups such as inmates and ex-offenders from different cultures in Africa (e.g., East Africa vs. South Africa) as well as in North America (Parker, Easton, & Klein, 2000) or in Europe. Thus, the second aim of this study was to uncover commonalities among culturally different groups of a vulnerable population, namely ex-offenders.

Method

Cross-national study

The project involved the following four countries: Canada, Ivory Coast, France, and South Africa, in order to conduct a cross-sectional descriptive study with male ex-offenders and a control group of men who had never been in prison. The study was conducted between August 2009 and June 2010.

Participants and setting

The breakdown of the 232 participants by country was as follows: 88 from Canada (43 ex-offenders), 50 from Ivory Coast (25 ex-offenders), 50 from South Africa (25 ex-offenders) and 44 from France (21 ex-offenders). The main inclusion criterion was for them to be aged between 20 and 50 years old. For half of the participants, a second criterion was that they were ex-offenders who had spent at least one month in prison, with no restrictions as to the type of offenses they had been incarcerated for or their status while in prison. For the other half, which represents the control group, there was no restriction other than the age criteria.

The majority of the 232 participants were between 20 and 50 years of age (M_{age} = 33.9 years, SD = 9.8 Upon the first contact with potential participants, it was mentioned that we were looking for participants between 20 to 50 years old. However, at data entry we found out that 13 questionnaires had older participants than foreseen. Of the 232 participants, 117 had never been in prison and 114 had at least one stay in prison, of which 42% had more than one stay (M_{stay} = 2.6, SD = 5.5). Those who had been in prison were 6.5 years older than the control group (*t*-test 5.2, $p = 0.001$), fewer had gone to college or university (42% vs. 66% respectively, $p < 0.001$) and had more children under their responsibility than participants who had never been in prison (37% and 24% respectively, $p < 0.05$). There were no significant differences between the two groups on the point of having been tested or not (seropositivity), marital status (living presently with partner), employment status, HIV risk reduction self-efficacy, HIV risk perception and peer norms on condom use (all *p*-values > 0.05) (see Table 1).

Procedure

In order to recruit control participants as similar as possible to the ex-offender participants in terms of age, schooling and financial status, organizations such as food banks, social services organizations, employment centres were contacted in order to recruit potential participants on their premises. Recruitment was also done by word of mouth. The organizations had first been contacted in order to obtain permission to ask participants, residents or users if they accepted participating voluntarily in the study by filling in the anonymous questionnaire. The study protocol and the questionnaire had been approved by the ethics committee of the funding university and by local ethics committees. Upon their agreement, participants generally answered the questionnaire on site. Those who were interested in participating were either met on the site of the organization or at a place close by. The participants from France, Ivory Coast and half of the Canadian participants answered the French version of the questionnaire, whereas the South African participants and the other half of the Canadian participants answered an English version of the questionnaire. Participants received either a small payment for their participation to the study (equivalent to CAN $10) or received refreshment and payment for transport fares.

Measures

Knowledge of HIV

Source of information relative to HIV was assessed by two questions, from whom and where did you receive information. There were seven possible answers to the 'Who' question (e.g., medical and care personnel, close family/friends, etc.), whereas there were eight possible answers to the 'Where' question (e.g., prison, medical centre, street, etc.).

HIV knowledge was assessed with a 12-item test (Carey & Schroder, 2002). Examples of items were 'Is HIV spread by kissing?', 'Must a person have had many different partners to get HIV?', and the possible responses were either *Yes, No,* or *Do not know*. Items were scored as a correct response (= 1) or as an incorrect or do not know response (= 0), giving total scores from 0 to 12. Cronbach's alpha was 0.75 for this study sample.

Table 1. Sample characteristics

Socio-demographics	All	Cases (History of incarceration)	Control (No history of incarceration)	Statistic
	N (%)	*N* (%)	*n* (%)	
Age (in years)				
20-29	79 (34.8)	28 (25.0)	51 (44.3)	< 0.001
30-39	80 (35.2)	35 (31.2)	45 (39.1)	
40-60	68 (30.0)	49 (43.8)	19 (16.5)	
Education				
Primary or Secondary	105 (46.1)	75 (65.8)	39 (34.2)	< 0.001
Post-Secondary	123 (53.9)	48 (42.1)	66 (57.9)	
Employment status				
Not employed	145 (65.9)	65 (62.5)	80 (69.0)	0.312
Employed	75 (34.1)	39 (37.5)	36 (31.0)	
Sexual orientation				
Heterosexual	211 (90.6)	102 (89.5)	109 (91.6)	0.580
Homo or bisexual	22 (9.4)	12 (10.5)	10 (8.4)	
Country of residence				
Canada	89 (38.2)	43 (37.7)	46 (38.7)	0.085
France	44 (18.9)	21 (18.4)	23 (19.3)	
Ivory Coast	50 (21.5)	25 (21.9)	25 (21.0)	
South Africa	50 (21.5)	25 (21.9)	25 (21.0)	
Substance use frequency				
Alcohol (3 or more times/week)	37 (16.9)	14 (12.8)	23 (20.9)	0.111
Soft drugs (past month)	65 (32.8)	29 (29.3)	36 (36.4)	0.289
Hard drugs (past month)	27 (14.9)	13 (14.3)	14 (15.6)	0.111
HIV variables				
HIV knowledge				
Low (0-8)	59 (26.8)	26 (24.8)	33 (28.7)	0.799
Medium (9-10)	64 (29.1)	31 (29.5)	33 (28.7)	
High (11-12)	97 (44.1)	49 (45.7)	49 (42.6)	
HIV risk perception				
Low (0-1)	97 (42.5)	47 (42.0)	50 (43.1)	0.243
Medium (2-4)	60 (26.3)	25 (22.7)	35 (30.2)	
High (5-10)	71 (31.1)	40 (35.7)	31 (26.7)	
HIV risk reduction self-efficacy				
Low	72 (33.3)	33 (31.4)	39 (35.1)	0.835
Medium	71 (32.9)	36 (34.3)	35 (31.5)	
High	73 (33.8)	36 (34.3)	37 (33.3)	
Peer pressure to use condoms	130 (60.5)	62 (56.9)	68 (64.2)	0.329
Peer pressure not to use condoms	51 (24.2)	20 (18.9)	31 (29.5)	0.071

Risk awareness

In order to assess participants' perceptions of risks of infection with HIV, the question was asked about 'Your **personal** risk of getting infected by HIV/AIDS', with a scale ranging from 0 risks to 10, very high risk).

Participants reported their use of 8 behavioural strategies (self-efficacy) to reduce risk for HIV and other STIs. Specific behaviours were adapted from Bryan, Fisher, & Fisher (2002) research on HIV prevention preparatory behaviours and included retrospective reports of behaviours that facilitate condom use, e.g., 'I have kept condoms near by me,' 'I told a partner that we needed to use a condom,' and 'I got free condoms from a clinic or other agency.' Each preparatory behaviour was responded to with Yes or No for having performed the act in the previous month. The number of preparatory behaviours (self-efficacy) was summed to form a composite score with a range of 8–40. Cronbach's alpha was 0.81 for this study sample.

Risk and preventive behaviours were evaluated by questions relative to sexual behaviours with three types of partners: regular, non regular and commercial sex partners. For each of these partners, participants indicated the number they had in the last twelve months, if they had used a condom (male or female) the last time they had sex with that type of partner (response choices: *Yes*, *No, Don't remember*), and the frequency with which they or their partners had used a condom during the past 12 months (response choices: *every time*, *almost every time*, *sometimes*, *never*, *don't know*).

Substance use was assessed with three questions: 1) the frequency of alcohol use, 2) the use of soft drugs (e.g., marijuana/hashish/dagga), and 3) the use of hard drugs (e.g., cocaine, coke, snow/crack/freebase/LSD/amphetamine/speed (e.g. TIK, upper). Response options ranged from did not use = 1 to use every day = 6.

With respect to social influences, peer pressure about condom use was assessed with two questions, 'Are there people that approve and insist that you use condoms?' and 'Are there people that disapprove of you using condoms? Response option was 'Yes' or 'No'.

Finally, socio-demographic questions and questions relative to incarceration and offending were included.

Data analysis

Data were analysed using International Business Machines Cooperation (IBM)-Statistical Package for Social Sciences (SPSS) (version 20.0 for Windows; IMB-SPSS Inc., Chicago, IL, USA). Pearson chi-square was used for

analysis of proportions. Bi-variate analysis and multiple logistic regressions were used to investigate associations between the outcome of HIV risk behaviour and independent variables (sociodemographic, substance use and HIV variables).

Results

Sources of information

Ninety percent of the participants had received information about HIV at one time or another, with no significant differences between group statuses. Results relative to the HIV sources of information (from whom?) and origin (from where?) showed very few significant differences between either group. As for the sources from whom information was received, ex-offenders were significantly less likely to have obtained information from the media $\chi^2 = 9.02$ (1,1), $p < 0.01$, from teachers $\chi^2 = 3.22$ (1,1), $p < 0.05$, and from close family and friends $\chi^2 = 4.03$ (1,1), $p < 0.05$.

As to where they got the information, ex-offenders differed significantly from control participants only for prison. As one would expect, 49% of ex-offenders received that information while they were in prison, $\chi^2 = 62.40$ (1,1), $p < 0.001$.

HIV knowledge

As regards HIV knowledge, participants were divided in three groups, low (0–8/12), medium (9–10/12) and high knowledge (11 or 12/12 good answers). As can be seen in Table 1, the majority of participants were in the low-medium group (56%), with no significant differences between groups and knowledge level. Results show generally high HIV knowledge. Indeed, almost half of all cases and controls (44.1%) had all, or almost all (minus 1), the right answers relative to true or false statements on HIV ways of transmitting the infection, and 73% had three or four wrong answers (out of 12) (see Table 1).

HIV risk behaviour

Overall, 39.3% of the participants had penetrative sex (vaginal or anal) with two or more partners in the past 12 months, 55% had an irregular sexual partner and 25.1% a commercial sexual partner in the past 12 months. Unprotected sex at last intercourse was 60.6% with a regular partner, 42.6% with an irregular partner and 49.4% had unprotected sex at last intercourse with a commercial sexual partner. Combined the overall mean sexual risk behaviour was 2.2; this did not differ significantly by a history of incarceration status. In fact, participants with no history of incarceration had a higher HIV risk behaviour (had more irregular and/or commercial sexual partners) than participants with a history of incarceration (see Table 2).

The personal risk of getting HIV was rated as relatively low, with 42.5% saying that they were at low risk.

HIV risk behaviour correlates

Overall, 99 (42.5%) of the participants had engaged in 3 or more HIV risk behaviours. In bivariate analysis, younger age, coming from the Ivory Coast, alcohol use, higher HIV risk perception, lower HIV risk reduction self-efficacy and peer pressure to use condoms were found to be associated with HIV risk behaviour. In multivariate analysis, younger age, coming from the Ivory Coast, and higher HIV risk perception was found to be associated with HIV risk behaviour (see Table 3).

More than half of the ex-offenders (56.5%) had never had an HIV test, and all except for one of the 8.2% HIV diagnosed positive was on ART.

Discussion

This study conducted among male cases (ex-offenders) and controls (general population) from four countries (three continents) found that, in spite of cultural specificity, there were more similarities than differences between culturally diverse samples of ex-offenders and their control counterparts. These similarities were as much at the health prevention level (no significant differences for having been tested for seropositivity), as for socio-demographics (marital and employment status), or HIV risk reduction self-efficacy, HIV perceptions (risk and peer norms on condom use).

In spite of good knowledge, there were also a certain amount of misconceptions that were shared by many cases and controls. For example, a third of all participants answered 'YES' or DON'T KNOW to the statement 'it takes multiple sexual partners in order to get infected'. The same percentage did not know or agreed that one is protected when one has sexual relations with a virgin. Akeke et al., (2007a) found the same percentage with a sample of inmates from Lesotho. Holding this type of misconception can lead to risk taking and may favour the rape of children (Akeke et al., 2007a). Results also show that misconceptions such as believing that one can get infected by kissing was shared by almost one participant

Table 2. HIV risk behaviour

HIV risk index variables	All	Cases (History of incarceration)	Control (No history of incarceration)	Statistic
	N (%)	*N* (%)	*N* (%)	
Two or more sexual partners in the past 12 months	93 (39.3)	42 (36.8)	51 (42.9)	< 0.349
No condoms use at last sex intercourse with regular partner	100 (60.6)	54 (66.7)	46 (54.8)	< 0.118
Had irregular partner in the past 12 months	88 (55.0)	36 (40.4)	52 (59.8)	0.010
No condom use at last intercourse with irregular partner	52 (42.6)	23 (43.4)	29 (42.0)	0.880
Had a commercial sex partner in the past 12 months	49 (25.1)	17 (17.7)	32 (32.3)	0.019
No condom use at last intercourse with commercial sex partner	40 (49.4)	18 (58.1)	22 (44.0)	0.218
	M (SD)	*M* (SD)	*M* (SD)	
Total HIV risk bevaviour	2.2 (1.6)	2.0 (1.6)	2.4 (1.7)	0.079

Table 3. Prevalence of HIV risk behaviour and logistic regression with HIV risk behaviour

Socio-demographics	Prevalence of HIV risk behaviour	Logistic regression with HIV risk behaviour	
	N (%)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)1
History of incarceration			
No	55 (46.2)	1.00	---
Yes	44 (38.6)	0.71 (0.42–1.19)	
Age (in years)			
20-29	40 (50.6)	1.00	1.00
30-39	38 (47.5)	0.84 (0.45–1.56)	0.98 (0.86-1.17)
40-60	20 (29.4)	0.39 (0.20–0.77)**	0.85 (0.74-0.97)*
Education			
Primary or Secondary	48 (45.7)	1.00	---
Post-Secondary	49 (39.8)	0.81 (0.48–1.38)	
Employment status			
Not employed	65 (44.8)	1.00	---
Employed	28 (37.3)	0.73 (0.41–1.30)	
Sexual orientation			
Heterosexual	85 (40.3)	1.00	---
Homo or bisexual	14 (63.6)	2.40 (0.96–6.00)	
Country of residence			
Canada	31 (34.8)	1.00	1.00
France	18 (40.9)	1.30 (0.62–2.72)	1.07 (0.48-2.58)
Ivory Coast	32 (64.0)	3.33 (1.61-6.86)**	2.53 (1.00-6.32)*
South Africa	18 (36.0)	1.05 (0.51–2.17)	0.95 (0.38-2.19)
Substance use			
Alcohol (3 or more times/week)	24 (64.9)	1.26 (1.07–1.49)**	1.10 (0.89-1.35)
Soft drugs (past month)	33 (50.8)	1.42 (0.78–2.57)	---
Hard drugs (past month)	12 (44.4)	1.01 (0.44–2.30)	---
HIV variables			
HIV knowledge			
Low (0-8)	30 (50.8)	1.00	---
Medium (9-10)	26 (40.6)	0.66 (0.32–1.35)	
High (11-12)	39 (40.2)	0.65 (0.34–1.25)	
HIV risk perception			
Low (0-1)	27 (27.8)	1.00	1.00
Medium (2-4)	27 (45.0)	2.12 (1.08–4.17)*	2.51 (1.12-5.66)*
High (5-10)	44 (62.0)	4.23 (2.20-8.12)***	4.11 (1.88–8.98)***
HIV risk reduction self-efficacy			
Low	39 (54.2)	1.00	1.00
Medium	31 (43.7)	0.66 (0.34–1.27)	0.80 (0.30–1.76)
High	24 (32.9)	0.41 (0.21–0.81)**	0.54 (0.24–1.22)
Peer pressure to use condoms	65 (50.0)	2.15 (1.21–3.81)**	1.79 (0.89–3.62)
Peer pressure not to use condoms	27 (52.9)	1.78 (0.94–3.36)	---

[1]Hosmer and Lemeshow chi-square 4.54, *df* 8, $P = 0.806$; Cox and Snell R^2 0.19; Nagelkerke R^2 0.26
***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

out of four. This type of misconception can feed fear and sustain prejudices against HIV positive people (Akake et al., 2007a). These findings are in agreement with the study of Akeke et al., (2007a) and that of others (Belenko et al., 2004; Sabitu et al., 2009). This level of misconceptions is rather surprising since 90% of all participants had received HIV/AIDS information at one time or another.

Various HIV risk behaviours were found to be similar among cases and controls in that more than a third had multiple sex partners, more than one quarter commercial sex, and almost half lacked condom use with a commercial sexual partner, as found in other studies among ex-offenders (Chimphambano et al., 2007; MacGowan et al., 2003; Odujinrin & Adebajo, 2001; Sifunda et al., 2007; Sabitu et al., 2009).

A considerable number of cases and controls engaged in illicit drug use, as also found in other studies with ex-offenders (Hudson et al., 2011; Sifunda et al., 2007). Other studies also found a lack of antiretroviral treatment (ART) among ex-offenders (Clements-Nolle et al., 2008).

The study found that higher HIV risk perception was associated with HIV risk behaviour, which seems to be opposed to what other studies found (MacGowan et al., 2003; Seal, Eldrige, Kacanek, Binson, Macgowan, & Project START Study Group, 2007). One possible interpretation is that higher risk perception is indicative of depressive symptoms which have been found to be associated with HIV risk behaviours among 'at risk' populations (Perdue, Hagan, Thiede, & Valleroy, 2003; Tucker, Liht, de Swardt, Jobson, Rebe, McIntyre, & Struthers, 2013). Thus, it is possible that participants that scored highest in HIV risk perception were also more depressed than other participants.

Study participants coming from the Ivory Coast were found to have higher HIV risk behaviour than in the other study countries. High HIV risk behaviour has also been found in a study among university students in the Ivory Coast (Peltzer, Pengpid, & Tiembre, 2013). Further, in bivariate analysis it was found to be in agreement with other studies (e.g., MacGowan et al., 2003) that alcohol use was associated with HIV risk behaviour.

Study limitations

There are limitations of the present research. Firstly, it is possible that the number of risk behaviours reported by ex-offenders, which is similar to or even lower than controls, was in fact underreported. Since most of the participants were on parole and were recruited near the station where they had to report every month, it is possible that they could have hesitated to give a true account of their risk behaviours even though they were assured of the anonymous treatment of their answers. Furthermore, some of these behaviours, for example illicit drug use, are prohibited. Thus, under-reporting cannot be excluded. Secondly, the small number of participants is another limitation to the present study. It would be important that the same study, using the same questionnaire, be conducted with a larger number of ex-offenders and if possible with a longer time lapse after release from prison. Thirdly, other measures indicative of high HIV risk behaviours such as depressive symptoms should be included in further studies with ex-offenders. Fourthly, the cross-sectional design has its limitations, and a prospective study, e.g., by using a diary, would be closer-to-life and could produce results with an increased validity.

Conclusion

The study revealed that among this sample of male ex-offenders, there were high rates of unprotected sex. Even if the majority of the participants had received HIV information at one time or another, the level of misconception identified suggests limited exposure to effective HIV education and prevention interventions. Corresponding needs of these populations should be addressed by educational programmes and interventions specifically tailored not only for ex-offenders but also for people with the same background, as the present results show that HIV misconceptions, faulty perceptions and risk behaviours are not found only among ex-offenders. Finally, community organizations dealing with ex-offenders need to improve HIV training for officers working with ex-offenders so that they can impart knowledge on HIV transmission and prevention to ex-offenders and make HIV risk reduction programmes more available to ex-offenders.

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